SIEMENS

SIREMOBIL Compact L

SP

System Manual

Installation and Setting Instructions

Replacing the lifting column

These instructions are valid for replacing the lifting column on the systems
SIREMOBIL Compact L, part number 37 80 629
and ARCADIS Varic, part number 80 80 017

© Siemens AG 2005
The reproduction, transmission or use of this document or its contents is not permitted without express written authority. Offenders will be liable for damages. All rights, including rights created by patent grant or registration of a utility model or design, are reserved.

n.a.
Print No.: SPR2-130.841.02.01.02
Replaces: n.a.

English
Doc. Gen. Date: 07.05

Chapter	Page	Revision
0-4	all	01

Page

1 General 1 - 1

Notes and symbols . . . 1 - 1
Validity of these instructions . . . 1 - 1
Safety information . . . 1 - 2
General safety information (in existing documents) . . . 1 - 2
General electrical safety information . . . 1 - 2
Radiation safety information . . . 1 - 3
Mechanical safety information . . . 1 - 3
Safety information - risk of infection . . . 1 - 4
Protective conductor resistance test information . . . 1 - 4
Required documents . . . 1 - 6
Required tools and measurement devices . . . 1 - 6
Required material . . . 1 - 6

2 Removing the lifting column 2 - 1

Preparations . . . 2 - 1
Board D3 . . . 2 - 1
Board D1 . . . 2 - 1
Board D2 . . . 2 - 3
Line filter . . . 2 - 3
Switched-mode power supply M 14 . . . 2 - 3
Stabilization bracket . . . 2 - 3
Removal of the railing handle . . . 2 - 5
Removal of the swivel brake . . . 2 - 5
Removing the C-arm . . . 2 - 5
Removing the upper cover with control panel . . . 2 - 5
Removal of the lifting column . . . 2 - 5

3 Installing the lifting column 3 - 1

Preparation for installation . . . 3 - 1
Installing the new lifting column . . . 3 - 1
Installing the new cover hood with control board . . . 3 - 4
Installing the C-arm and swivel brake . . . 3 - 5
Installing the line filter . . . 3 - 6
Installing the switch-mode power supply M 14 . . . 3 - 7
Installing the stabilization bracket . . . 3 - 7
Installing the boards D1 and D2 . . . 3 - 7
Adjustment of the swivel brake . . . 3 - 9
Remaining work . . . 3 - 9
Functional check . . . 3 - 10
Protective conductor test . . . 3 - 10

4 Changes to previous version 4 - 1

Notes and symbols

Text emphasized in technical documentation has the following meaning:

⚠DANGER	**DANGER indicates an immediate danger that if disregarded will cause death or serious physical injury.**
⚠WARNING	**WARNING indicates a possible danger that if disregarded can cause death or serious physical injury.**
⚠CAUTION In	**CAUTION used with the safety alert icon indicates a possible danger that if disregarded will or can lead to minor or moderate physical injury and/or damage to property.**
NOTICE	**NOTICE used without the safety alert icon indicates a possible danger that if disregarded may or will lead to an undesirable result or state other than death, physical injury or property damage.**

Validity of these instructions

These instructions are valid for replacing the lifting column on the SIREMOBIL Compact L, part number 37 80 629 and ARCADIS Varic, part number 80 80 017 systems with the aid of the part set 71 41 000.

Safety information

General safety information (in existing documents)

⚠WARNING

Danger of injuries, death or material damage.

Note

- **the product-specific safety notes in these instructions,**
- **the general safety information in the document TD00-000.860.01...**
  and
- **the safety information in accordance with ARTD Part 2.**

Non-compliance can lead to death, to injuries or to material damage.

General electrical safety information

⚠WARNING

Electrical safety!
Non-compliance can lead to severe injuries and even death as well as to material damage.

After opening the cover panels, the parts under voltage are accessible. To avoid danger, disconnect the system from the power supply prior to opening the covers. Pull out the power supply plug.

If an uninterruptible power supply (UPS) is installed in the system, the voltage output of the UPS must also be switched free of voltage or the voltage output plug must be disconnected.

If work has to be performed under electrical voltage, the general safety information according to TD00-000.860.01... must be complied with.

⚠CAUTION In

Electrical voltage!
Non-compliance can lead to material damage.

When working on the system, ESD regulations must be observed.

Radiation safety information

⚠WARNING

X-ray radiation!
Non-compliance can lead to illnesses, irreversible damage to body cells and the genotype, severe injuries and even death.

In work on the system in which radiation must be released, the radiation protection directives and the rules for radiation protection according to ARTD 02.731.02 must be complied with.

Please note:

- Use available radiation protection devices.
- Wear radiation protection clothing (lead apron).
- Stay as far away as possible from the radiation source.
- Release radiation only if necessary.
- Set radiation activity as low as possible.
  (Low kV and mAs values, short radiation time)
- Release radiation for as short a time as possible.

Checks in which radiation must be released are identified by the radiation warning symbol.

Mechanical safety information

⚠CAUTION In

Danger of burns on hot parts or components!
Non-compliance can lead to slight to medium injuries, especially of the hands.

After opening the cover panels, parts and components (e.g. power components, cooling units, electromagnetic brakes) are accessible that can have temperature of > 50C during operation. To avoid burns, switch the system off prior to touching parts or components and let them cool at least 5 minutes.

⚠CAUTION In

Danger of injuries on mechanical parts!
Non-compliance can lead to slight to medium injuries, especially of the hands.

Parts such as flat plugs, threaded bolts, cut-off cable ties and component edges that, if care is not taken, can cause crushing, scrapes and cuts to the skin, particularly to the hands, can be touched after the covers are opened.

Perform the particular work steps with special care and attention to detail.

If needed, wear working gloves.

Safety information - risk of infection

⚠WARNING	**Danger of infections due to pathogens!** **Non-compliance can lead to severe injuries and even death.** **This product can be contaminated by infected blood or other bodily fluids.** **Avoid all contact with blood or other bodily fluids!** **Strictly observe the safety information in ARTD-002.731.37... regarding prevention of infectious diseases during customer service calls.**

Protective conductor resistance test information

Observe the instructions in the safety rules for installation and repair (ARTD-002.731.17 ...).

The protective conductor resistance must be measured after every intervention in the system.

However, documentation of the measured values is required only during periodical safety checks.

If parts / components that can decisively influence the protective conductor resistance are replaced (e.g. replacement of the mains cable, replacement of the ON/OFF assembly, replacement of multi-core connection cables, which also create the protective conductor connection between parts of the system (e.g. monitor cable or C-arm cable)), or if protective conductor connections have been repaired, then the protective conductor resistance must be measured. The values must be documented and assessed in the protective conductor resistance report.

NOTE	**Evaluate the results by comparing the first measured value to the corresponding values documented during preceding maintenance procedures or safety checks.** **A sudden or unexpected increase of the measured values, even if the limit value of 0.2 ohms is not exceeded, indicates errors in the protective conductor connections. (Protective conductor or contacts).**

The measurement must be made according to DIN VDE 0751, Part 1 (see ARTD Part 2). In this case the protective conductor resistance in the normal operating condition to all conductive touchable parts of the system must be measured.

Make sure that control cables or data cables between the components of the system do not imitate any protective conductor connection.

During the measurement the power cable and additional connection cables which also create the protective conductor connection between parts of the system (e.g. monitor cable between basic unit and monitor trolley) must be moved section by section to detect broken conductors.

The protective conductor resistance may not exceed 0.2 ohms.

.

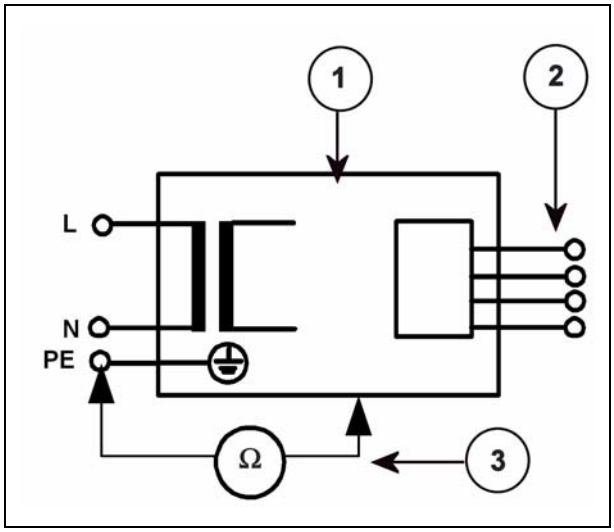

Fig. 1 Measuring circuit for measuring the protective conductor resistance in systems that are separated from the power supply, according to DIN VDE 0751-1:2001-10, Fig. C2.
1 = System
2 = Application part (not present)
3 = Measuring arrangement (integrated in the measuring instrument)

Required documents

Wiring diagram G5429

Service instructions SPR2-130.061.02....

Required tools and measurement devices

Standard tool kit*	
Digital multimeter e.g.. Fluke 187	99 94 831
Safety tester e.g. Safety Tester UNIMET 1100	5138 727
Spring balance 25N e.g.	44 29 114 NH029
Spring balance 200N e.g.	44 15 113 RH090
Torque wrench 25 - 130 Nm 1/2" e.g.	34 24 561
Service-PC*	
Connection cable Service-PC - Host e.g.	99 00 440 RE999

Required material

Viscogen KL300, 40 g	73 95 353
Heat conduction paste e.g.	20 48 650
Lifting column part set	71 41 000

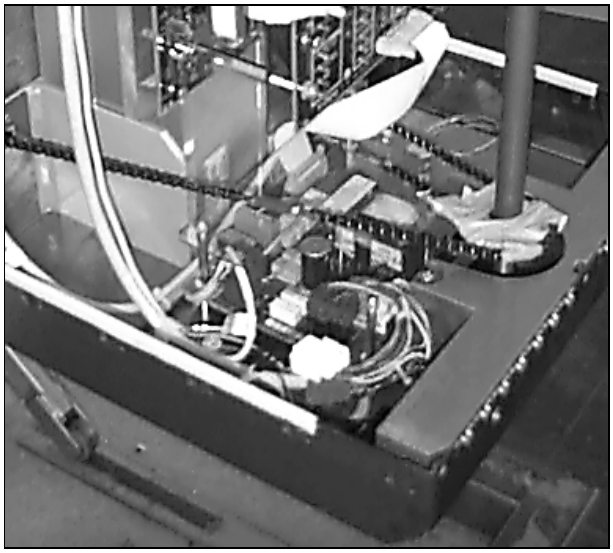

Fig. 1

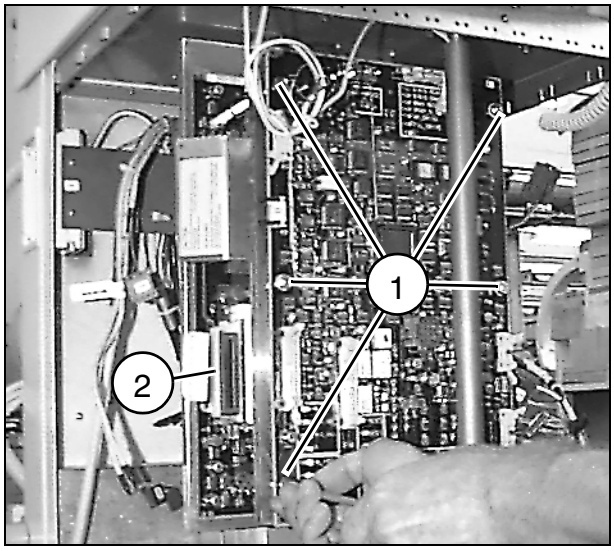

Fig. 2

Preparations

- Switch the SIREMOBIL off and disconnect the power plug.
- Secure the system against being switched back on.
- For safety against tilting, support the system on the operating side with wood or something similar.

Board D3

- Unscrew the plexiglas cover of the board D3.
- Pull off all connectors except for D3/X2 (Fig.1).
- Unscrew the protective conductor from the board.

NOTE	**The board D3 does not have to be removed.**

Board D1

- Pull all connectors off from the board.
- Unscrew the grounding strap from the board.
- Unscrew all 6 fastening nuts (1/Fig.2)
- Remove the board carefully and place it on a surface suitable for ESD.
- Remove the spacer bushes from the 6 screws.
- Open the strain relief of the ribbon cable X 4 (2/Fig.2).

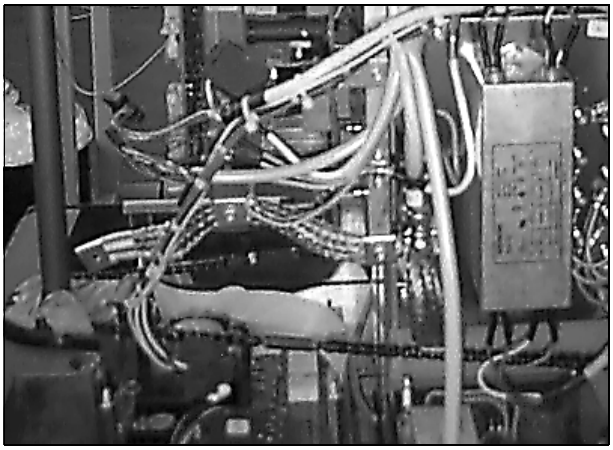

Fig. 3

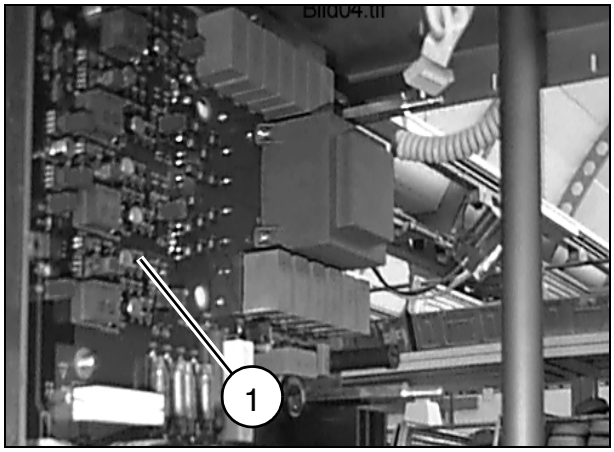

Fig. 4

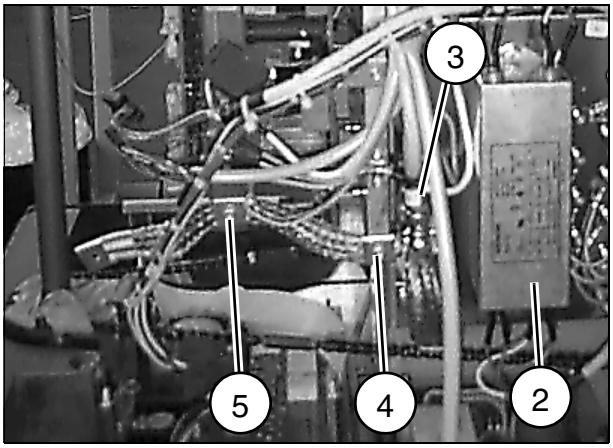

Fig. 5

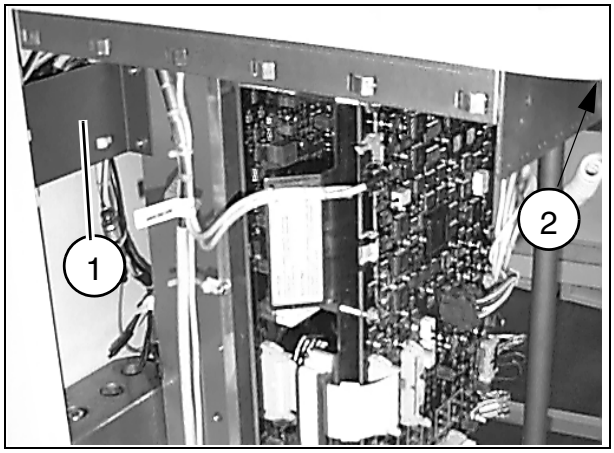

Fig. 6

Board D2

- Unscrew the grounding strap from the intermediate plate.
- Remove the intermediate plate.
- Unscrew the ground bracket from the heat sink, it remains on the board (1/Fig. 3).
- Pull all connectors off from the board.
- Unscrew the 6 spacer screws.
- Unscrew the board from the heat sink (1/Fig. 4).
- Remove the board and place it on a surface suitable for ESD.
- Unscrew the grounding strap from the heat sink (5/Fig. 5).
- Unscrew the protective conductor.
- Unscrew the 6 fastening screws of the heat sink.
- Lift out the heat sink.

Line filter

- Pull off the lower connectors of the line filter.
- Unscrew the line filter.
- Unscrew all protective conductors from the base plate of the line filter (2/Fig. 5).
- Unplug the BNC connector (X1) and unscrew the BNC plug (3/Fig. 5).
- Unscrew the grounding strap from the base plate (4/Fig. 5).
- Unscrew the base plate and unscrew the studs from the lifting column.

Switched-mode power supply M 14

- Pull the connectors X2 and X3 from the power supply; the protective conductor can remain connected.
- Remove the switched-mode power supply;
  to do this only loosen the two upper nuts and unscrew the lower nut.

Stabilization bracket

- Unscrew the stabilization bracket of the monitor cable plug from the lifting column (1/Fig. 6).

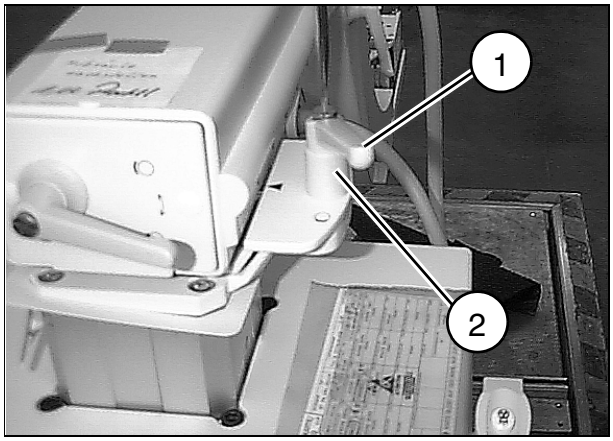

Fig. 7

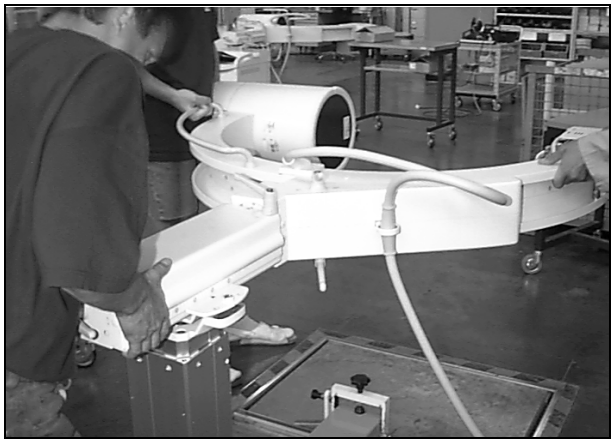

Fig. 8

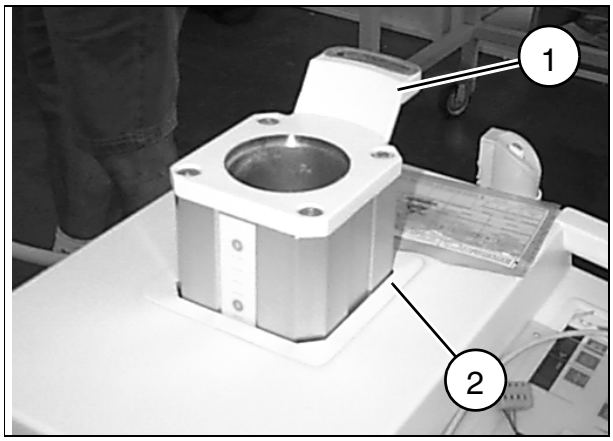

Fig. 9

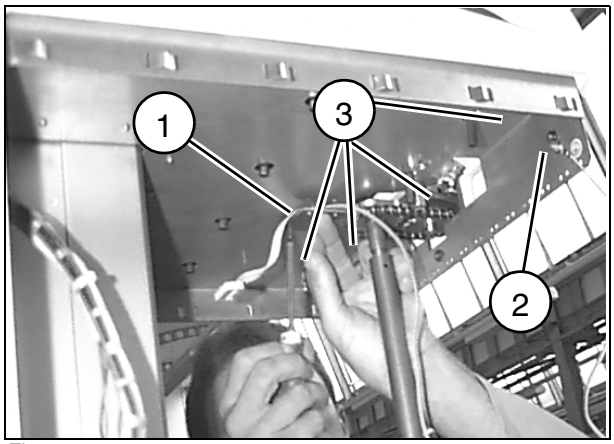

Fig. 10

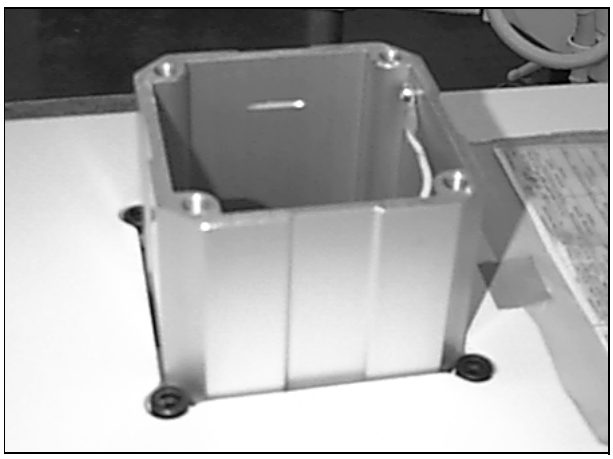

Fig. 11

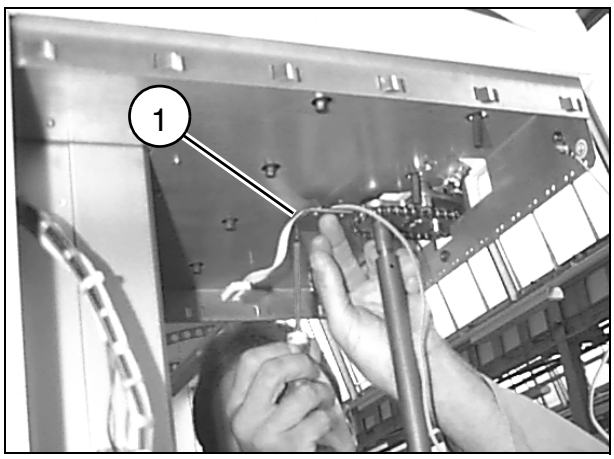

Fig. 12

Removal of the railing handle

- Unscrew the left railing handle from the C-arm.

Removal of the swivel brake

- Unscrew the handle (1/Fig.7) and remove the plastic guard (2/Fig. 7).
- Unscrew the stop bush.
- Unscrew the cover plate under the swivel brake.
- Drive out the spring pin and withdraw the bolt.
- Place the C-arm horizontal and secure it against unintentional swiveling.

Removing the C-arm

- With three persons lift the C-arm out from its bearing and place it on a table.
  Pay attention to the C-arm cable (Fig. 8).
- Unscrew the bearing shell of the C-arm bearing (1/Fig. 9).
- Move the lifting column down fully by briefly applying 230 V_{AC} to the 3-pin connection plug of the lifting column (N to X7 A/1, P to X7 A/3)

Removing the upper cover with control panel

- Unscrew the strain relief of the control panel cable (1/Fig. 10).
- Unscrew the protective conductor (2/Fig. 10).
- Underneath the steering lever the steering mechanism is covered with a small rectangular cover panel. Loosen this. See also 2 / Fig. 6.
- Unscrew the fastening screws (3/Fig. 10).
- Release the cover ring around the steering lever.
- Release and remove the cover (2/Fig. 9) on the lifting column.
- Unscrew the 4 fastening screws (Fig. 11) on the lifting column.
- Remove the upper cover with control board; to do this lift the cover over the lifting column and withdraw it carefully over the steering lever and pull the plug of the control panel cable carefully through the rectangular opening (1/Fig. 12).

Removal of the lifting column

- Unscrew the four fastening screws of the lifting column from the bottom of the unit; tilt the unit a little to do this if necessary.
- Two persons are required to lift out the lifting column,
  pay attention to the connection cable of the lifting column.

This page is intentionally left blank.

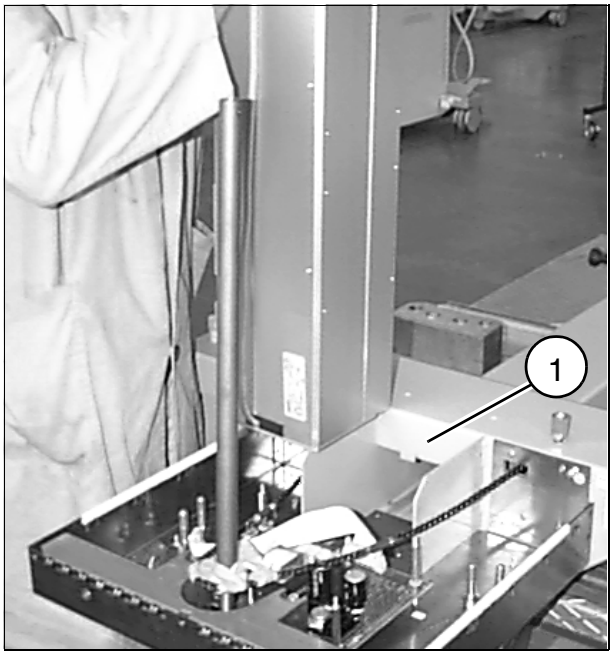

Fig. 1

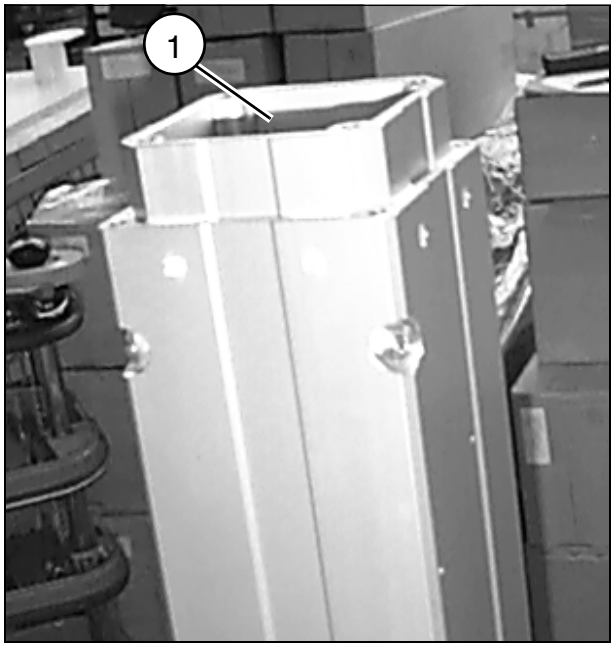

Fig. 2

Preparation for installation

- Recut the thread (1/Fig. 1).
- Eject all leads of the four-pin plug on the connection cable and insert them in the three-pin plug as follows:

  X7A/1 X7A/2 X7A/3

- Remove the black plastic cover from the lifting column (1/Fig. 2).

Installing the new lifting column

- Two persons are required to insert the new lifting column through the opening in the chassis; pay attention to the connection cable.
- Set the lifting column in the guide (1/Fig. 1) and screw it tight from the bottom of the unit (torque 40 Nm).

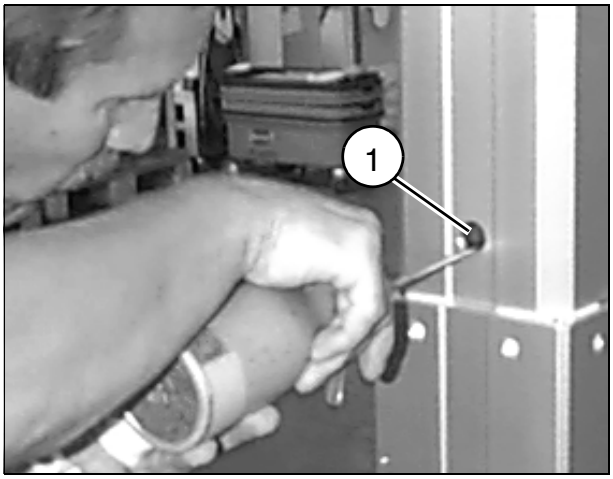

Fig. 3

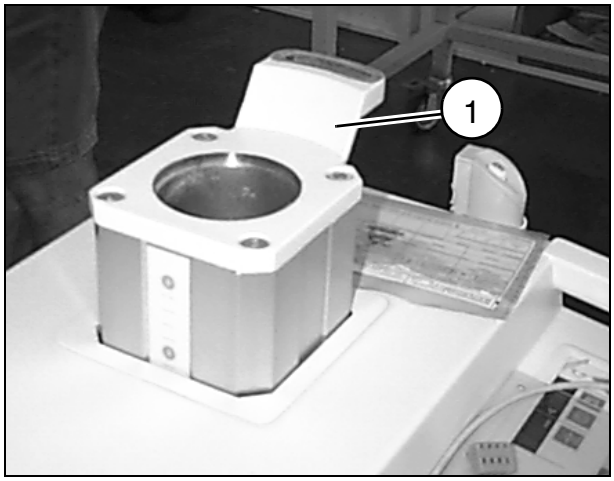

Fig. 4

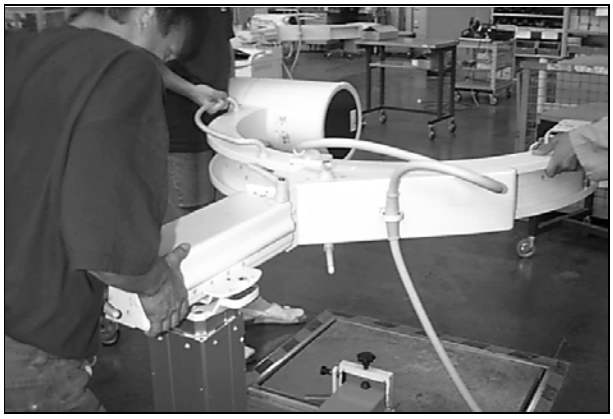

Fig. 5

Fig. 6

- Move the lifting column upwards by applying 230V (N to X7 A/1 and phase to X7 A/2) until the lubrication bore (1/Fig. 3) is freely accessible.
- Remove the plastic cap in the bore (1/Fig.3) and oil the lifting spindle through the opening. With the oil can, fill with oil until it can be felt through the opening with your finger.
  Use Viscogen KL 300 oil, part number 73 95 353.
- Close the bore again with the plastic cap.
- Install the bearing of the C-arm in the lifting column (1/Fig. 4).
- Three persons are required to set the C-arm in the bearing for testing the new lifting column (Fig. 5); secure it against twisting.
- Connect the plug X7A (connection cable of the lifting column):

Neutral to X7 A/1 Phase to X7 A/2 for raising Phase to X7 A/3 for lowering

NOTE	**Connect the emergency stop switch for moving the lifting column. The emergency stop switch must not be pressed.**

- Move the lifting column up and down a few times and observe the noise development.
- Move the lifting column down again fully.
- Three persons are again required to lift the C-arm out from its bearing (Fig. 5) and place it on a table.
- Unscrew the bearing of the C-arm again from the lifting column (1/Fig. 4).

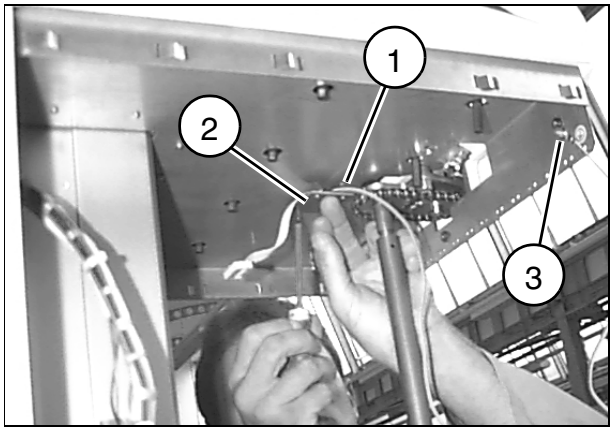

Fig. 7

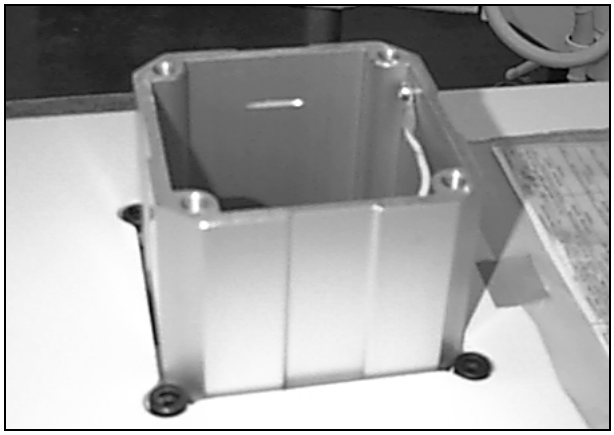

Fig. 8

Fig. 9

Fig. 10

Installing the new cover hood with control board

- Fit the cover hood over the lifting column.
- Guide the ribbon cable and the protective conductor of the control board through the recess (1/Fig. 7).
- Place the cover hood in position.
- Fasten the cover hood to the lifting column (Fig. 8) with 4 screws and to the steering lever side from below also with 4 screws; the two long screws are intended for the inside.
- Refit the strain relief (2/Fig. 7) of the control panel cable.
- Screw the protective conductor (3/Fig. 7) back onto the chassis (on the operating side from the left below).
- Refit the small rectangular cover panel underneath the steering lever (2 paneling screws).

Installing the C-arm and swivel brake

- Place the new collar over the lifting column, align it centrally and glue it tight.
- Three persons are required to insert the C-arm back in the bearing.
- Install the swivel brake again:
  - Insert the bolt from below through the strap.
  - Drive the spring pin back in with its opening in the direction of the expected pressure.
- Place the Belleville springs in position. The lower spring with the cone upwards, the upper spring with the cone downwards.
- Screw the stop bush in.
- At first only plug on the brake lever.
- Screw tight the cover plates under the swivel brake.
- Fasten the railing handle back on the C-arm.

Fig. 11

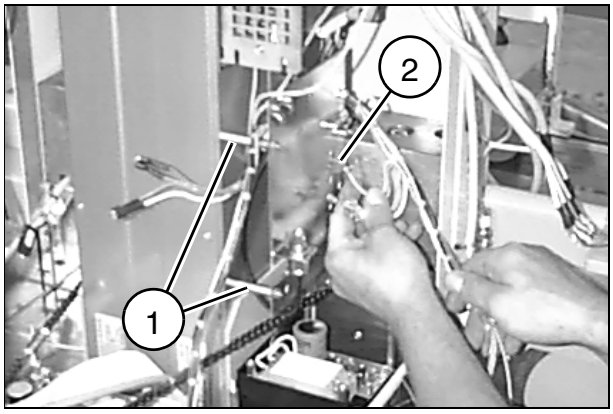

Fig. 12

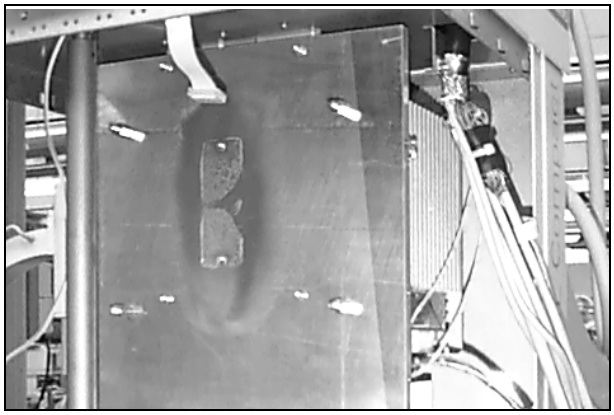

Fig. 13

Installing the line filter

- Screw in and tighten the 4 studs (1/Fig. 11) with the short thread adapters in the bores of the lifting column.
- Fit the base plate and tighten with 4 M4 nuts and contact washers.
- Run the cable back through behind the lifting column to the right.
- Fasten all protective conductors (2/Fig. 12) back on the base plate of the line filter, and insert contact washers between cable lug and base plate.
- Fasten the line filter with two screws to the base plate.
- Fasten the BNC plug on the base pate.
- Plug in the BNC cable.

Installing the switch-mode power supply M 14

- Install the base plate.
- Install the switched-mode power supply with the plug-in connections downwards.
- Plug in the connections.
- Screw the protective conductor onto the base plate of the line filter and place the contact washer under the cable lug.

Installing the stabilization bracket

- Fasten the stabilization bracket of the monitor cable plug again.
- Fasten the protective conductor on the unit floor and on the chassis, and place the contact washers under the cable lugs.

Installing the boards D1 and D2

- Fasten the heat sink on the lifting column operating side (Fig. 13).
- Fasten 6 spacer screws on the heat sink (Fig. 13).
- Apply heat conduction paste on the contact surface for the the heat sink.
- Fit the board D2 on the spacer screws and fasten it to the heat sink (Fig. 13).
- Plug in the connectors on D2 board.
- Fasten the D2 board with the spacers (Fig. 13).
- Plug the intermediate plate back on.
- Fit the spacer tubes on the 6 screws.

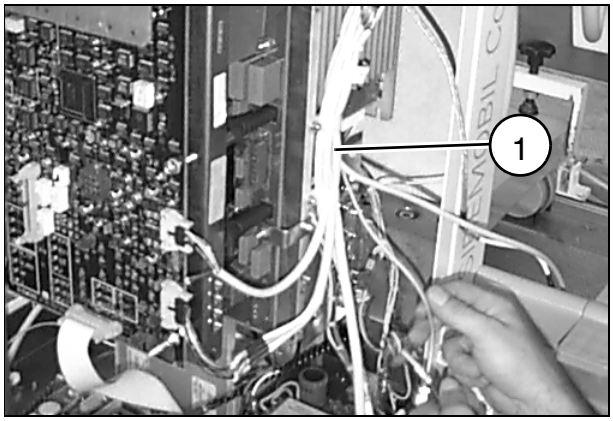

Fig. 14

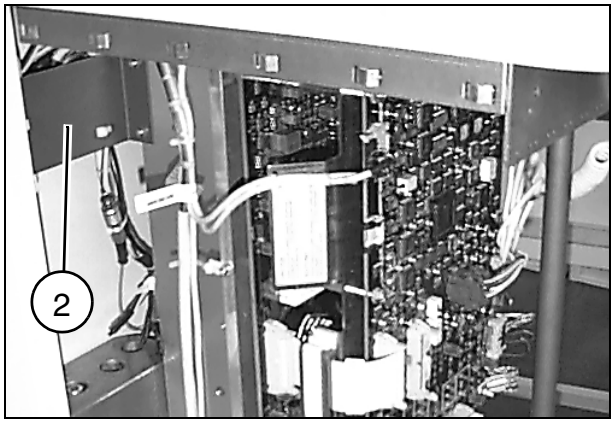

Fig. 15

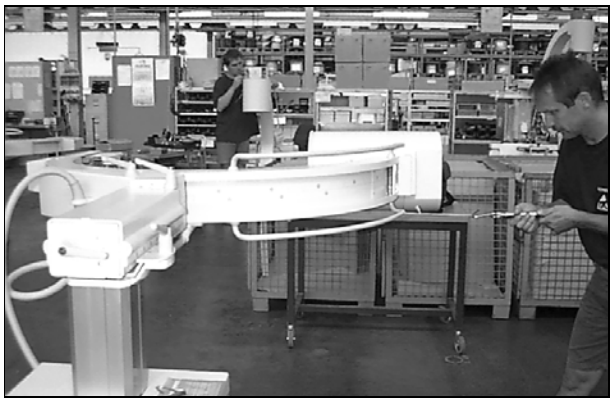

Fig. 16

- Fit the board D1 carefully on the 6 screws and fasten with washers and nuts (Fig. 14).
- Plug the plugs on the corresponding connectors of D1 board.
- Fasten the grounding strap on the D1 board as well as on the intermediate plate, on the heat sink and on the base plate of the line filter.
  When tightening the screws on the D1 board make sure that the grounding strap has no contact with the components in its vicinity.
- Connect all shields of the connected cables to ground with cable clamps.
- Fasten the C-arm cable (1/Fig. 14) and plug in the connectors.
- Draw the Diamentor cable through to the left behind the lifting column.
- Fasten the bracket (2/Fig. 15) back of the lifting column.

Adjustment of the swivel brake

Adjustment values: Brake released ⩽ 10 Nm Brake applied ⩾ 100 Nm

- Turn the C-arm horizontally (Fig. 16)
- Measure the braking forces with a spring balance (20N) for released brake and spring balance (200N) for applied brake at the railing handle end of the image intensifier. In this case hook the spring balance to the railing with a cloth band or similar. Set the brake to the above values by adjusting the stop of the brake lever.
- Set the brake lever in the end positions (brake applied or released) in each case parallel to the horizontal arm.
- Apply the brake.
- Remove the brake lever.
- Affix the plastic guard centrally with some silicone adhesive.
- Fit the brake lever in the same position as previously and screw it tight.

Remaining work

- Glue on the new ring cover to the steering lever centrally in relation to the lever.
- Switch on the system and check all functions.
- Move the lifting column fully upwards and glue on the supplied scale sticker vertically in the middle of the inner segment.
- Install all covers; connect the protective conductors to the covers and reconnect the emergency stop button.

Functional check

- Move the lifting column out. Press the emergency stop switch approximately in the middle of the vertical lift.
  - It must be no longer possible to move the lifting column.
- Unlock the emergency stop switch again.
  - The lifting column can be moved again.
- Move the lifting column into the top end position.
  - The lifting column motor must switch off automatically at the top point of the lift.
  - No squeaking noises should occur during the movement of the lifting column.
- Move the lifting column in completely.
  - The lifting column motor must switch off before the lowest end position is reached and an acoustic warning signal must be audible.
  - No squeaking noises should occur during the movement of the lifting column.
- Briefly release the button for lowering the lifting column and then press it again.
  - The lifting column can be moved into the lowest position. An acoustic warning signal sounds during the movement into the lowest end position.

Protective conductor test

- Perform the protective conductor test according to ARTD-002-731.17....
  Observe the instructions for the protective conductor test in the first chapter.

  ➪ The protective conductor resistance must not exceed 0.2 ohms.

Changes to previous version 4 - 1

New publication

This page intentionally left blank.